



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,648	09/22/2003	Walter H. Christiansen	US.03.036	1123
33349 7590 11/24/2008 HEXION SPECIALTY CHEMICALS, INC. 1600 SMITH STREET, P.O. BOX 4500 HOUSTON, TX 77210-4500				
EXAMINER				
FEELY, MICHAEL J				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
11/24/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/667,648

Applicant(s)

CHRISTIANSEN ET AL.

Examiner

Michael J. Feely

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-14 and 16-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Pending Claims

Claims 1-7, 9-14, and 16-22 are pending.

Response to Amendment

1. The declaration under 37 CFR 1.132 filed August 7, 2008 is insufficient to overcome the rejection of claims 1-7, 9-14, and 16-22, as set forth in the last Office action because: no *evidence* has been provided. The declaration merely reiterates the arguments set forth in the response.

Response to Arguments

2. Applicant's arguments, see pages 7-8 of the response, filed August 7, 2008, with respect to the rejection(s) of claim(s) 1-7, 9-14, and 16-22 under 35 U.S.C. 103(a) (*over Schwarzer and Alvino et al.*) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Thoseby et al. (US Pat. No. 5,304,662) and Bagga (US Pat. No. 4,284,574).

3. The rejection of claims 1, 3, 9-14, 16, 17, and 19-22 under 35 U.S.C. 103(a) as being unpatentable over Schwarzer (US Pat. No. 3,452,116) has been withdrawn.

4. The rejection of claims 2, 4-7, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarzer (US Pat. No. 3,452,116) in view of Alvino et al. (US Pat. No. 4,327,143) has been withdrawn.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-4, 9-14, and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoseby et al. (US Pat. No. 5,304,662).

Regarding claims 1-4, 9, 10, and 16-19, Thoseby et al. disclose: (1) a process for preparing a resin coated article, the process comprising contacting a substrate with an accelerated resin composition (column 4, lines 7-22; column 5, lines 7-15) comprising an epoxy resin (Abstract; column 4, lines 7-22; column 5, line 55 through column 7, line 23), a curing agent (column 4, lines 7-22; column 4, line 23 through column 5, line 6; column 5, lines 7-15), and an alkali metal containing cure accelerator compound *see claim for list* (column 5, lines 7-15); wherein the curing agent is a dicyandiamide or a melamine (column 5, lines 7-15); wherein the epoxy resin is derived from the reaction of an epihalohydrin and a phenol or a phenol type compound (column 6, lines 27-57); and wherein the contacting occurs by a contacting method (column 5, lines 47-54);

(2) wherein the accelerated resin composition further comprises one or more solvents (column 7, lines 24-26);

(3) wherein the accelerated resin composition is in powder, hot melt, solution, or dispersion form (column 4, lines 7-15);

(4) wherein the contacting method is selected from the group consisting of powder coating, spray coating, die coating, roll coating, resin infusion and contacting the substrate with a bath comprising the accelerated resin composition (column 5, lines 47-54);

(9) wherein the alkali metal containing cure accelerator compound is selected from the group consisting of an alkali metal containing hydroxide, *alkoxide*, phenoxide, carboxylate, halide salt, carbonate and combinations thereof (column 5, lines 7-15);

(10) wherein the alkali metal containing compound is represented by the formula MOR or $(MO)_n-R$ wherein M is a metal selected from Group 1 of the periodic table of elements, O is oxygen, and R is hydrogen or a substituted or *unsubstituted hydrocarbyl group* (column 5, lines 7-15);

(16) wherein the phenol or a phenol type compound is selected from the group consisting of bisphenols, halogenated bisphenols, hydrogenated bisphenols, novolac resins, polyalkylene glycols and combinations thereof (column 6, lines 27-57);

(17) a resin coated article prepared by the process of claim 1 (column 5, lines 47-54);
(18) a prepreg prepared by the process of claim 1 (column 5, lines 47-54); and

(19) wherein the accelerated resin composition is free of imidazole cure accelerator (*not required by Thoseby et al.*).

Thoseby et al. fail to explicitly disclose a combination of the instantly claimed curing agent (dicyandiamide or melamine) and accelerator (alkali metal containing compound). Rather, they disclose: "In conjunction with the curing agents there may also be used appropriate accelerators. When poly(aminoamides), *dicyandiamides*, polythiols, or polycarboxylic acid anhydrides are employed for curing, tertiary amines or their salts, quaternary ammonium compounds, or *alkali metal hydroxides* can serve as accelerators," (*see column 5, lines 7-13*). In light of the limited combinations set forth in this disclosure, it would have been obvious to use a combination of *dicyandiamide* and *alkali metal hydroxide* in the composition of Thoseby et al.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed combination of curing agent and accelerator in the composition of Thoseby et al. because Thoseby et al. disclose that when poly(aminoamides), *dicyandiamides*, polythiols, or polycarboxylic acid anhydrides are employed for curing, tertiary amines or their salts, quaternary ammonium compounds, or *alkali metal hydroxides* can serve as accelerators.

Thoseby et al. also fail to explicitly disclose the use of a brominated epoxy resin. Rather, they disclose: "As already indicated, the compounds of this invention may be used with conventional epoxide resins," (*see column 5, lines 55-56*), "Other epoxide resins which may be used include polyglycidyl and poly(β -methylglycidyl) ethers obtainable by the reaction of substances containing per molecule, two or more alcoholic hydroxy groups, or two or more phenolic hydroxy groups, with epichlorohydrin, glycerol dichlorohydrin, or β -methylepichlorohydrin, under alkaline conditions, or alternatively, in the presence of an acidic catalyst with subsequent treatment with alkali," (*see column 6, lines 27-35*) and "Preferably the polyglycidyl ethers are derived from substances containing two or more phenolic hydroxy groups per molecule, for example...2,2-bis(3,5-**dibromo**-4-hydroxy-phenyl)-propane," (*see column 6, lines 47-57*). Accordingly, it would have been obvious to include a brominated epoxy resin in the composition of Thoseby et al.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a brominated epoxy resin in the composition of Thoseby et al. because Thoseby et al. contemplate the use of conventional epoxy resins, such as polyglycidyl ethers. These polyglycidyl ethers are preferably derived from compounds containing two or more

phenolic hydroxy groups per molecule, such as 2,2-bis(3,5-**dibromo**-4-hydroxy-phenyl)-propane.

Regarding claims 11-13, Thoseby et al. disclose the use of alkali metal alkoxides (*see column 5, lines 7-13*); however, they fail to explicitly disclose: *(11)* wherein M is lithium, sodium or potassium, and R is hydrogen or a C₁ to C₄₀ hydrocarbyl group; *(12)* wherein OR represents a hydroxy, a methoxy, an ethoxy, an n-propoxy, an isopropoxy, an n-butoxy, an isobutoxy, a sec-butoxy, a tert-butoxy, or a phenoxy group; and *(13)* wherein the alkali metal containing compound is selected from the group consisting of lithium hydroxide, sodium hydroxide, potassium hydroxide, sodium methoxide, potassium methoxide, lithium methoxide and combinations thereof.

It is the Examiner's position that the skilled artisan would have obviously envisaged these particular materials based upon the disclosure of *alkali metal alkoxides*. The claims disclose the most common of the alkali metals. Furthermore, the claims disclose the most common of lower-alkoxides, including methoxy. At the very least, these lower alkoxy groups are obviously encompassed by the prior art's disclosure of *alkali metal alkoxides*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the materials of claims 11-13 in the composition of Thoseby et al. because Thoseby et al. contemplate the use of *alkali metal alkoxides* as accelerators in concert with dicyandiamide curing agents. At the very least, these lower alkoxy groups are obviously encompassed by the prior art's disclosure of *alkali metal alkoxides*.

Regarding claim 14, Thoseby et al. fail to explicitly disclose: *(14)* wherein the alkali metal containing cure accelerator compound is utilized in an amount greater than 0.00001 molar

equivalents per 100 grams of epoxy resin solids. However, the skilled artisan would have recognized the accelerator amount as a result effective variable. A minimum amount would have been required to effectively accelerate the curing reaction.

In light of this, it has been found that, “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation,” – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and “A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation,” – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed amount of accelerator in the composition of Thoseby et al. because the skilled artisan would have recognized the accelerator amount as a result effective variable. A minimum amount would have been required to effectively accelerate the curing reaction.

Regarding claims 20-22, the teachings of Thoseby et al. are as set forth above and incorporated therein to obviously satisfy the embodiments of claims 20-22.

7. Claims 1-4, 9-14, and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bagga (US Pat. No. 4,284,574).

Regarding claims 1-4, 9, 10, and 16-19, Bagga discloses: (I) a process for preparing a resin coated article, the process comprising contacting a substrate with an accelerated resin

composition (column 6, lines 14-29; column 7, lines 15-23) comprising an epoxy resin (Abstract; column 6, lines 14-29; column 7, line 63 through column 9, line 33), a curing agent (column 6, lines 14-29; column 6, line 30 through column 7, line 14; column 7, lines 15-23), and an alkali metal containing cure accelerator compound *see claim for list* (column 7, lines 15-23); wherein the curing agent is a dicyandiamide or a melamine (column 7, lines 15-23); wherein the epoxy resin is derived from the reaction of an epihalohydrin and a phenol or a phenol type compound (column 8, lines 35-65); and wherein the contacting occurs by a contacting method (column 7, lines 55-62);

(2) wherein the accelerated resin composition further comprises one or more solvents (column 9, lines 34-36);

(3) wherein the accelerated resin composition is in powder, hot melt, solution, or dispersion form (column 6, lines 14-29);

(4) wherein the contacting method is selected from the group consisting of powder coating, spray coating, die coating, roll coating, resin infusion and contacting the substrate with a bath comprising the accelerated resin composition (column 7, lines 55-62);

(9) wherein the alkali metal containing cure accelerator compound is selected from the group consisting of an alkali metal containing hydroxide, *alkoxide*, phenoxide, carboxylate, halide salt, carbonate and combinations thereof (column 7, lines 15-23);

(10) wherein the alkali metal containing compound is represented by the formula MOR or (MO)_n-R wherein M is a metal selected from Group 1 of the periodic table of elements, O is oxygen, and R is hydrogen or a substituted or *unsubstituted hydrocarbyl group* (column 7, lines 15-23);

(16) wherein the phenol or a phenol type compound is selected from the group consisting of bisphenols, halogenated bisphenols, hydrogenated bisphenols, novolac resins, polyalkylene glycols and combinations thereof (column 8, lines 35-65);

(17) a resin coated article prepared by the process of claim 1 (column 7, lines 55-62);

(18) a prepreg prepared by the process of claim 1 (column 7, lines 55-62); and

(19) wherein the accelerated resin composition is free of imidazole cure accelerator (*not required by Bagga*).

Bagga fails to explicitly disclose a combination of the instantly claimed curing agent (dicyandiamide or melamine) and accelerator (alkali metal containing compound). Rather, he discloses: "In conjunction with the curing agents there may also be used appropriate accelerators. When poly(aminoamides), *dicyandiamides*, polythiols, or polycarboxylic acid anhydrides are employed for curing, tertiary amines or their salts, quaternary ammonium compounds, or *alkali metal hydroxides* can serve as accelerators," (*see column 7, lines 15-21*). In light of the limited combinations set forth in this disclosure, it would have been obvious to use a combination of *dicyandiamide*, and *alkali metal hydroxide* in the composition of Bagga.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed combination of curing agent and accelerator in the composition of Bagga because Bagga discloses that when poly(aminoamides), *dicyandiamides*, polythiols, or polycarboxylic acid anhydrides are employed for curing, tertiary amines or their salts, quaternary ammonium compounds, or *alkali metal hydroxides* can serve as accelerators.

Bagga also fails to explicitly disclose the use of a brominated epoxy resin. Rather, he discloses: "As already indicated, the compounds of this invention may be used with conventional

epoxide resins," (*see column 7, lines 63-64*), "Other epoxide resins which may be used include polyglycidyl and poly(β -methylglycidyl) ethers obtainable by the reaction of substances containing per molecule, two or more alcoholic hydroxy groups, or two or more phenolic hydroxy groups, with epichlorohydrin, glycerol dichlorohydrin, or β -methylepichlorohydrin, under alkaline conditions, or alternatively, in the presence of an acidic catalyst with subsequent treatment with alkali," (*see column 8, lines 35-43*) and "Preferably the polyglycidyl ethers are derived from substances containing two or more phenolic hydroxy groups per molecule, for example...2,2-bis(3,5-**dibromo**-4-hydroxy-phenyl)-propane," (*see column 8, lines 55-65*). Accordingly, it would have been obvious to include a brominated epoxy resin in the composition of Bagga.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a brominated epoxy resin in the composition of Bagga because Bagga contemplates the use of conventional epoxy resins, such as polyglycidyl ethers. These polyglycidyl ethers are preferably derived from compounds containing two or more phenolic hydroxy groups per molecule, such as 2,2-bis(3,5-**dibromo**-4-hydroxy-phenyl)-propane.

Regarding claims 11-13, Bagga discloses the use of alkali metal alkoxides (*see column 7, lines 15-23*); however, he fails to explicitly disclose: (*11*) wherein M is lithium, sodium or potassium, and R is hydrogen or a C₁ to C₄₀ hydrocarbyl group; (*12*) wherein OR represents a hydroxy, a methoxy, an ethoxy, an n-propoxy, an isopropoxy, an n-butoxy, an iso-butoxy, a sec-butoxy, a tert-butoxy, or a phenoxy group; and (*13*) wherein the alkali metal containing compound is selected from the group consisting of lithium hydroxide, sodium hydroxide,

potassium hydroxide, sodium methoxide, potassium methoxide, lithium methoxide and combinations thereof.

It is the Examiner's position that the skilled artisan would have obviously envisaged these particular materials based upon the disclosure of *alkali metal alkoxides*. The claims disclose the most common of the alkali metals. Furthermore, the claims disclose the most common of lower-alkoxides, including methoxy. At the very least, these lower alkoxy groups are obviously encompassed by the prior art's disclosure of *alkali metal alkoxides*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the materials of claims 11-13 in the composition of Bagga because Bagga contemplates the use of *alkali metal alkoxides* as accelerators in concert with dicyandiamide curing agents. At the very least, these lower alkoxy groups are obviously encompassed by the prior art's disclosure of *alkali metal alkoxides*.

Regarding claim 14, Bagga fails to explicitly disclose: **(14)** wherein the alkali metal containing cure accelerator compound is utilized in an amount greater than 0.00001 molar equivalents per 100 grams of epoxy resin solids. However, the skilled artisan would have recognized the accelerator amount as a result effective variable. A minimum amount would have been required to effectively accelerate the curing reaction.

In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation," – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges

of said variable might be characterized as routine experimentation,” *–In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed amount of accelerator in the composition of Bagga because the skilled artisan would have recognized the accelerator amount as a result effective variable. A minimum amount would have been required to effectively accelerate the curing reaction.

Regarding claims 20-22, the teachings of Bagga are as set forth above an incorporated therein to obviously satisfy the embodiments of claims 20-22.

8. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoseby et al. (US Pat. No. 5,304,662) or Bagga (US Pat. No. 4,284,574) in view of Alvino et al. (US Pat. No. 4,327,143).

Regarding claims 5-7, Thoseby et al. and Bagga disclose the formation of prepregs (*see column 5, lines 47-54 of Thoseby et al.; column 7, lines 55-62 of Bagga*); however, they fail to explicitly disclose the substrate materials set forth in claims (5-7).

Alvino et al. also form prepreg materials (*see Example 2 and Comparative Example 3*), and their teachings demonstrate that these substrate materials, particularly glass fiber sheets, are recognized in the art as suitable substrate materials for prepregs. In light of this, it has been found that the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination – *see MPEP 2144.07*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed substrate materials, as taught by Alvino et al., in the

Art Unit: 1796

prepreg of Thoseby et al. or Bagga because the teachings of Alvino et al. demonstrate that these substrate materials, particularly glass fiber sheets, are recognized in the art as suitable substrate materials for prepreps.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is (571)272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Feely/
Primary Examiner, Art Unit 1796

November 19, 2008